SCIENCE NEEDS/OPPORTUNITIES STATEMENT

NON-INTRUSIVE, NON-DESTRUCTIVE CHARACTERIZATION METHODS FOR HAZARDOUS CHEMICAL COMPONENTS OF MIXED LOW-LEVEL WASTE

Identification No.: RL-MW07-S
Date: October 2001

Program: Waste Management
OPS Office/Site: Richland Operations Office/Hanford Site
PBS No.: RL-WM06
Waste Stream: 1469 – MLLW Debris to WM
TSD Title: TBD
Operable Unit (if applicable): N/A.
Waste Management Unit (if applicable): N/A.
Facility: CWC, WRAP, Future M-91 Facility.

***Priority Rating*:**

This entry addresses the "Accelerated Cleanup: Paths to Closure (ACPC)" priority:

____ 1. Critical to the success of the ACPC.
____ 2. Provides substantial benefit to ACPC projects (e.g., moderate to high life-cycle cost savings or risk reduction, increased likelihood of compliance, increased assurance to avoid schedule delays).
_X_ 3. Provides opportunities for significant, but lower cost savings or risk reduction, and may reduce uncertainty in ACPC project success.

Need Title: Non-Intrusive, Non-Destructive Characterization Methods for Hazardous Chemical Components of Mixed Low-Level Waste.

Need/Opportunity Category: *Science Need*

Need Description: Development of non-intrusive, non-destructive methods to identify and measure non-radionuclide, RCRA hazardous components of mixed low-level. Non-destructive, non-intrusive methods exist for measuring radionuclide components, but currently no known technique exists for detection and quantification of non-radionuclide, hazardous components within a waste drum. There is a special need for the measurement of volatile and semi-volatile organic compounds and for measuring PCBs in solid materials at RCRA hazard levels. Contaminates that are of primary interest include: acretonitrile, acrolein, aluminum, barium, cadmium, calcium oxide, carbon disulfide, chlorine gas, chloroform, chromium III, copper ion, cyanide ion, dichloromethane, fluorine (gas), fluoride ion, hydrogen chloride, hydrogen fluoride, kerosene, lead, mercury, nickel, nitric acid, nitrobenzene, polystyrene, potassium hydroxide, pyridine,

silver chloride, sodium cyanide, sodium, hydroxide, toluene, tributyl phosphate, and triethylamine.

Schedule Requirements:

Earliest Date Required: (12/31/02)

Latest Date Required: (N/A)

Technology if available could be deployed anytime after calendar year 2000.

***Problem Description*:** Much of the Hanford Site's MLLW will be treated by offsite commercial vendors. There is a high cost associated with the present baseline of opening drums for sampling and characterizing the waste prior to treatment.

Potential Life-Cycle Cost Savings of Need (in $000s) and Cost Savings Explanation: At this point in project definition, formal estimation of cost savings has not been made, but savings in operations costs could be significant and could potentially approach $5,000K.

Benefit to the Project Baseline of Filling Need: Reduction in operations costs and potentially a reduction of space/facilities that would be required to achieve the sorting and analysis throughput requirements

Relevant PBS Milestone: A2G-08-109 M-91-15 Complete Facilities/Initiate Treatment of RH/CH-LLW

***Functional Performance Requirements*:** Cost-effective characterization/verification methods for MLLW prior to LDR treatment.

***Work Breakdown Structure (WBS) No.*:**	***TIP No.:***
N/A	N/A.

Current Baseline Technology: Baseline technology is intrusive sampling for chemical analysis.

End-User: Waste Management Programs.

Contractor Facility/Project Manager: Robert Bloom, Fluor Hanford, Inc. (FH), (509) 373-2382, Fax (509) 372-1162, Robert_R_Bloom@rl.gov.

Site Technical Point-of-Contact: Michael Purcell, FH, (509) 373-3240, Fax (509) 373-1180, Michael_A_Purcell@rl.gov.

DOE End-User/Representative Point-of-Contact: Kevin Leary, DOE-RL, (509) 373-7285, Fax (509) 372-1926, Kevin_D_Leary@rl.gov.